DOCUMENT RESUME

ED 471 359 JC 030 030

AUTHOR	Tichenor, Stuart
TITLE	So, You're Published--What about Your Students?
PUB DATE	2002-05-00
NOTE	25p.; Paper presented at the Annual Meeting of the National Institute for Staff & Organizational Development (24th, Austin, TX, May 26-29, 2002).
PUB TYPE	Opinion Papers (120) -- Reports - Descriptive (141) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01/PC02 Plus Postage.
DESCRIPTORS	Annotated Bibliographies; Audience Awareness; Community Colleges; Content Analysis; Internet; Periodicals; Publications; Teaching Methods; *Two Year College Students; Two Year Colleges; *Writing Assignments; *Writing for Publication

ABSTRACT

This paper presents a writing exercise that the author uses in his technical writing courses. The purpose of the exercise is to: (1) convince students that their ideas have value; and (2) teach higher order thinking skills--specifically, analysis, synthesis, and evaluation. The author relates his own college experience, noting the fact that only two of his professors ever encouraged him to publish his writing. The author argues for planting the seeds of belief in writing ability early in a student's career. The writing exercise series begins with a magazine article analysis that focuses on purpose and audience, as well as article organization, tone, and vocabulary. After analyzing the article, students create an annotated bibliography of 3-5 additional articles. Finally, the students select a publication they like, and, using lessons learned from the previous exercises, write an article that could be published in that magazine. The author suggests that students look for publications that apply to their majors. In the end, the author argues, it is not as important to be published as it is to help students to realize that their ideas do have value, and that they are entitled to develop a writerly voice. (NB)

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ED 471 359

So, you're published—
What about your students?

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S. Tichenor

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
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Presented at:

NISOD 2002
Austin, Texas

Presented by:

Stuart Tichenor
Oklahoma State University-Okmulgee

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The original presentation contained all of this information on computer diskette and was handed out to those who attended my presentation.

So, you're published—what about your students?

If you find value in these assignments and use them, or would like to discuss ideas you have for improving them, please let me know—I'm always looking for ways to improve my teaching. If you would like extra copies for your colleagues, feel free to duplicate the files on this diskette, or email me at stich@osu-okmulgee.edu. I can send out extra copies as an email attachment.

Thanks.

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INTRODUCTION

One of the things I don't remember any of my college instructors ever telling me was that my ideas had any value. Whether it was because they had years of teaching and writing experience or held themselves artificially higher than their students, I don't know. Maybe they felt like someone who had not been "in the field" and had far less experience than them was incapable of having good ideas. I don't know that either. What I do know is that when I began writing, I was very unsure of myself and very unsure of my ideas. I was 38 when I started back to school, and when I wrote it was from a position of weakness, not knowing whether the ideas I presented in essays and research papers were worthwhile or had any value.

By the time I finished my bachelor's degree two years later, I was starting to understand the writing process. In graduate school, I soon realized that professors were more concerned about whether I had truly followed APA format and whether or not my references were fairly current. They were more concerned with whether or not I could produce graduate level writing, which typically consisted of long, embedded ideas in passive voice sentences. Good ideas, it seemed, were not necessarily needed—or even desired for that matter. There seemed no reason, according to my instructors, to connect good ideas with good research and good writing. That seemed to me a contradiction; I believe that good ideas precede good writing.

When one of my graduate school professors told me, "revise this, and I'll publish it in the newsletter I edit," I was floored. Up until that time, no one had ever said my ideas had any value. At the time, I felt like my very first publication was "an inside job" and didn't really count. Then, much to my surprise, the same professor left an email in my mailbox (that seemed revolutionary in 1993), one he had received from a colleague of his in *Korea* who said they'd

like to reprint my article in their magazine! Needless to say, my professor gave them the go-ahead and informed me after the fact—I framed the email message!

Other instances that have shown my ideas might have value were those that I did not act upon. Several times while in graduate school, I often wondered if I could write a magazine article. As a rule, I usually said to myself, "no, no one would be interested in that." Then, no more than six months later, I would pick up a magazine and see an article over the same topic. Obviously, that got me to thinking—if others can do it, why not me? And I continue to ask myself that question!

Still another graduate school experience occurred after the end of my degree program. I had already passed my comprehensives and received my master's. Instead of trying to find a job that started during the spring semester, I enrolled in enough credit hours to maintain my assistantship until the end of the academic year. One of the classes I enrolled in was a higher education course that focused on the community college system in the United States. One of the requirements, of course, was to write two research papers. At the end of the semester, the professor told me he thought he could get one of my papers published—so he initiated contact with the journal, set up what I needed to do, and then left me alone. For the next three or four months, copies of my paper went back and forth—and finally it was published as an ERIC Review in the *Community College Review*. Without my professor's help I would have never gotten published.

Most of my published writing since that has consisted of brief articles in newsletters and small magazines—it's not even "literary." Some people, I'm sure, would say that the topics I write about are rather mundane—mostly about teaching technical writing, teaching technical students, and the internship programs on our campus. However, it is published writing, and

while not generally reviewed by a jury of peers, it does discuss topics and ideas that are important to my students and me. What I write about is mine. What I write about are my ideas, my experiences, and my thoughts on the topic, and I do believe my ideas have value.

That feeling of value is what I try to plant in my students. It's important for them to know that they have valuable ideas. It's important for them to know that someone out there may want to listen or read about what they have to say. However, it's very difficult to convince students that their ideas do, indeed, have value. Already, fresh from high school, students have no self-confidence; likewise, older, non-traditional students often fail to believe in the value of their ideas. It's what keeps many of them from expressing themselves better on paper, I believe.

Besides trying to make students believe in themselves and their ability as writers, I want to teach higher order thinking skills. If we fall back on Bloom's Taxonomy, specifically, those higher-level skills include analysis, synthesis, and evaluation. Trying to get students involved with those higher-level thinking skills and having them write about what they know and what they value has proven to be more successful than just writing more papers and more formulaic assignments that have been taught over and over.

It hasn't been that long since I was a student. Now that I'm the teacher, I feel like it's my turn to do something that only two of my teachers did for me. A two-year technical school may seem like an unlikely place to try and get students published—but I believe the idea needs to be planted early in students' careers. For some students, whether they realize it now or not, there will be more school and higher degrees in their future. They shouldn't have to wait until they're 40—and in graduate school—before they recognize that their ideas may be publishable.

That's what I've tried to do with the series of assignments presented here. I want students to feel the value of their ideas being in print now. Of course, with any writing class,

there's always a caveat—this one is no different. There will always be students who refuse to participate altogether or participate in a marginal manner that nullifies what I'm trying to do. To me, that's just part of the teaching process.

READING AND WRITING IN YOUR PROFESSION

Most students already know the name of at least one or two trade publications—something their department subscribes to or, perhaps, in the case of internship students, something their dealership subscribes to and makes available to them. Once they know that they could be writing for one of these publications, the writing seems more "real." Of course, writing has always been real, but convincing technical students is another story!

Magazine Article Analysis

The series begins with a magazine article analysis that focuses on purpose and audience. I believe that using a magazine article out of a trade publication is going to be more relevant than any lecture I can deliver about purpose and audience. Besides determining purpose and audience, students must analyze the article's organization—how it's put together (headings and organization). In addition, I ask students to look at such characteristics as sentence length—and the type of vocabulary used in those sentences (is it technical? are there sufficient explanations?). Taking the writing one step further, I ask students to analyze paragraph structure (how many sentences are there to a paragraph? how many paragraphs to a section?). Content (including word choice) of course, means analyzing tone as well as the formality or informality of the writing; in addition, content is tied directly to "audience." Finally, I have students take a critical

look at the visuals. They are required to comment on the type of visual, its location, its effectiveness, and whether or not it actually adds to the article.

The analysis requires about 1½ to 2 pages to explain, single-spaced, block paragraphs, in memo format. Students generally think this is a simple assignment until they start picking apart an article; at that point, they begin to see the complexities and issues involved in writing. Furthermore, it helps them realize that there is far more to the printed word than what they thought. By the time they're done analyzing and evaluating the article, they have a better idea, at the very least, about how important purpose and audience are to a writer. They also gain a better understanding of how visuals can add or detract from an article—since I've had students who made both types of comments. At the very least, I hope that this assignment allows students to be more critical when looking at their reading material.

Annotated Bibliography

After students have analyzed one article, they write an annotated bibliography, locating from three to five more articles over the same topic, using professional literature. Students photocopy or print out articles from the Internet, then write informative summaries for them. Although certainly not a new assignment, by any means, reading a variety of articles on the same technical topic demonstrates to technical students the variety of voices and perspectives that may occur. In fact, most of the students remark that they didn't realize such a wide variety of voices existed. Because the assignment focuses on one topic—and students are doing an Internet search for information, they encounter an amazingly wide range of voices. The Internet search itself sometimes becomes a real learning experience as students attempt to find websites connected

with their profession, their professional publications, and then get faced with evaluating whether or not the article is usable.

Once students have found a sufficient number of articles, they write informative summaries over the article. This part of the assignment teaches them to look for key ideas (analysis) as well as how to condense an entire article into a concise paragraph that explains the key points and key conclusions. For technical students, this assignment can be problematic because not many students have experience in summary writing. Again, students are stretching their abilities by practicing a skill that may not have been stressed in their previous education. This assignment truly stretches students and requires them to perform above what they may used to be doing; the only downside to this assignment is that it can be very time-consuming to grade if the teacher has more than a couple of classes doing this assignment.

Writing an Article

Actually attempting to write a publishable-quality article is the final assignment in the series. I limit the word count in this assignment at 700-1200 words—approximately 2½ to 5 pages of double-spaced type. In this assignment, students must apply the lessons learned from the previous assignments, select a target publication, describe the audience, and write an appropriate article for that publication. As part of the assignment, students must synthesize what they have learned from reading professional literature—from both article analysis and the annotated bibliography assignments—and apply it to their writing process.

Target publications, I always hope, will be trade or professional publications. However, some students choose not to write for those particular audiences. Therefore, I do allow variations and modifications; for instance, I've had air conditioning and refrigeration students

target and write for deer hunters in *Field and Stream*. In addition, other students have chosen to write about topics such as building custom car stereo systems and going off-road in sport-utility vehicles. As long as students are writing about what they're passionate about, I figure I can allow a certain amount of leeway.

FINAL COMMENTS

As with any assignment or set of assignments, some experimentation may be necessary in order for these to fit the students' circumstances and broad range of interests. Again, the main goal of these assignments is to get technical students involved in the writing process. Allowing them to write about subjects they are passionate about appears the best way to get them involved. At this point, only two publications I have contacted (an air-conditioning/refrigeration weekly and a teacher's newsletter) have expressed an interest in student writing. Although the reality of publishing schedules differs greatly from the limits of traditional school schedules, these lessons contain more relevance for technical students and allow them to gain a better understanding of how the writing process is relevant to them and their futures.

It's not as important to get published as it is to put students in a mindset that allows them to realize their ideas do have value and that their writing can be valued by others in their profession—or by others with similar interests. Consequently, using the students' majors gives their ideas more value when it comes to producing a finished product. Another benefit is that the assignments can be modified for a variety of differing circumstances. Whatever subjects students are most passionate about, those interests can be used to show them the value of their ideas as well as the value of their writing.

Reading and Writing in Your Profession

When you graduate from college, your professional life will begin. However, your learning will not stop. At the rate new technologies develop, the training and education you receive in college could be obsolete in less than five years. Consequently, you will need to constantly be reading and retraining in order to stay current in your profession. In addition, writing in your profession—especially in trade magazines—will set you apart from many of your colleagues, enhance your resume, and increase your value as a professional.

(This file shows assignments and examples as they appear in the study guide).

Magazine Article Analysis

Reading in your field

One of the most important things a tradesperson or professional person can do is stay current. In every field, there are professional magazines and journals that discuss current issues and report on breakthroughs or new technologies that affect "how you take care of business."

After you graduate from this school, your learning process is just beginning! What you learn here is the groundwork. You *are not* an expert who knows it all and will never have to learn anything new. Those days died with crank telephones. The technology you learned at this school may well be obsolete within two or three years. In order for you to succeed, you must be a lifelong learner.

The best way to learn new skills and stay current on what's happening is to read. In most fields, there are several publications—each with its own focus and interest. You should be familiar with those publications—it might just impress your boss that you know of them and read them!

Analyzing a magazine

Before you submit an article to a magazine, you should be familiar with the issues it discusses. In addition, you should be familiar with the type of writing that is presented in that magazine. ***Knowing what a magazine wants means you have to pay close attention to who their audience is!*** Look for the following items when you begin analyzing your magazine:

- What is the tone? Formal or informal?
- Do the articles use "I"?
- Do the articles use quotes? How are they written?
- How are paragraphs structured? Are they long? Short?
- Does the article use headings? If so, how many? Is there more than one level of heading?
- Are there visuals used with the article? What kind? Pictures? Charts? How do they add to the article?
- How long is the article? Is it a feature article? Or, is it fairly short? Can you guesstimate the number of words? (Try "average words per line x number of lines).
- Is the content of the article debatable? In other words, could someone argue with what the author is saying?
- Does the article deal with a specific brand name? A specific organization? Is it promoting someone or something? Or, is it, perhaps, evaluating and reporting on the value of a product or organization?

There may be other issues you need to deal with in your report. Please feel free to discuss anything else you believe is relevant for this assignment.

See next page for suggested organization of analysis.

Suggested Organization for Article Analysis

In memo format, using topic headings, discuss the items listed above. Remember that you need to go into detail so your reader (instructor) will understand!

Source

Include name of magazine or website, name of article, issue (if applicable), author, page numbers.

Purpose and Audience

- Who reads the magazine—or visits the website?
- What is the purpose of the article?
- Why would they read the article you have chosen?

Article Content

- Is the material technical? Does the writer use technical vocabulary that only a professional in the field would understand?
- If so, how does that affect the article?
- Is the material "general interest"? (*Field & Stream, Popular Mechanics*)
- Tone—is this informal or formal? How can you tell?
- Does the article deal with a specific product? Organization? How does that affect the article (or, does it?)
- Is the content debatable? Could someone argue with what the writer is saying?

Structure

- Does the article read all the way across the page? (one column?)
- Does the article use two-column or three-column format?
- How does it affect reading? Does it make it easier? More difficult?

Visuals

- Are there photos? Charts or tables? Drawings?
- How many? Where are they located?
- How do they add to the information presented in the article?

Organization of Article

- How are topic headings used? How many are there?
- How long are the paragraphs? What is the average number of sentences per paragraph?

Final Comments

- Why did you choose this particular article?
- How will it help you? (Or, did you read it because you're just interested in the topic presented?)
- Overall effectiveness of the article—did the writer do a good job of presenting the material?

MEMO

To: Stuart Tichenor
From: Kaleb Garner
Date: October 16, 2001
Subject: Encryption article analysis

ARTICLE SOURCE
The "How It Works: Encryption" article is from the online version of *PC World* magazine, www.pcworld.com. The authors of the article are Andrew Brandt and Alexandra Krasne, and the article was published on the *PC World* website on February 14, 2000. Andrew Brandt is an associate editor and Alexandra Krasne is an editor/reporter, both are employed by *PC World*.

INTENDED AUDIENCE
The primary audience for *PC World's* website is the PC enthusiast. However, many other non-enthusiast computer shoppers probably read the website for its consumer advice. In addition, students or others in the process of learning about computers may find some of the articles helpful in understanding how a computer operates.

Both the enthusiast and the curious learners would probably read the encryption article. For the enthusiast, it might offer a few new ideas for formulating their own encryption technique, or help them understand the more complex techniques in use today. A student would read the article for an explanation of what encryption is, how it works, and how it can benefit computer users.

ARTICLE CONTENT
The article is not too technical for the intended audience, but someone who is not familiar with computers at all will have a hard time following the authors. However, when the authors do use advanced technical terms, they do a good job of explaining their meaning and how it relates to the encryption process being discussed. The text is written in an informal manner. The authors often refer to the reader personally and make entertaining comments throughout the article.

A specific product is not the focus of the article, but the authors do mention a few encryption products towards the end of the article. This could help the reader find and purchase encryption software if they were interested after reading the explanation of how encryption works. The inclusion of product names does not really affect the article because the main part, the explanation, is placed first and given the most emphasis. For the most part, the contents of the article are not debatable. Encryption is a specific science, and the core concepts of the various methods do not differ.

STRUCTURE

PC World uses a single column format for the article. A multi-column format is not that plausible because of the additional screen space required by the navigation features of the website. The setup works well, the article is easy to read and does not need a small, non-standard font size in order to fit into the allotted space.

ORGANIZATION OF ARTICLE

Topic headings are used sparingly, just two total in the entire article. They are bold, large type and followed by a blank line before the text begins. This makes it very easy to identify the heading. The average paragraph is about seven or eight lines long, but because the column is not that wide, only three to four sentences in length. A few paragraphs seem to drag on, but the rest of the article is easy reading for the most part.

VISUALS

There are a few diagrams and one photograph in the article. The photograph does not greatly add to the information in the article, but does serve to add flavor to the article. The two diagrams illustrate the way the two major types of encryption work. They help the reader understand the process more clearly.

FINAL COMMENTS

I chose this article because I have a personal interest in encryption. I believe this article can help me create an asymmetrical encryption process (a process which utilizes two keys or passwords to decode the data, instead of one). In addition, the article can help me by providing information on historical and current usage of encryption. The author did an excellent job of presenting the material. The definition of encryption, explanation of how it works, and presentation of how it can be used is all clearly stated and very understandable.

MEMO

To: Stuart Tichenor
From: Chad Wiesman
Date: September 28, 2001
Re: Article Analysis

Source
The name of the article that I chose is "Whither the Automobile." The source I found the article in is *Road & Track*. It is the September 1, 2001 issue. Author of the article is Charles F. Kettering. The pages the article is found on are 98 through 102.

Audience
The targeted audience would be any person that has an interest in car performance, the newest cars that will be on the market, cars that have arrived already on the market, and developing technologies about cars that are put in simple terms that most people can understand. The reason I read this article, and probably the reason other people would read this article, is because of the pictures on the cover pages showed pictures of fuels that are being developed. The title of the article did not catch my eye, and sounds as if it had nothing to do with the article.

Article Content
The article was taken from a magazine about general interests in popular and new cars. Since the article is in a magazine that targets the general public, the technical content of the article is kept to a minimum so most of the general public can understand the concepts of the new fuels being designed. The few technical terms within the article, such as nanotechnology and hydrogen fuels, are described to give the general public a better understanding of what they are reading.

Tone of "Whither the Automobile" is informal and gives many different views of what the future of fuels for our cars and homes will be, and what the effects will be on the economy and on the eco-system. This leaves the content of the article very debatable because it gives many different possibilities, the author's opinion, and the future is always debatable.

The article does discuss specific products and ideas. One idea that the article discusses is an idea that Honda and Acura have devised. You would buy into the company, instead of buying a car, and you would get a regular car for regular driving, a van for vacations that you could use, and could use an expensive sports car for weekend getaways. It also discusses the fuel cell cars that are being tested by Ford, GM, and DaimlerChrysler. The goals and production dates are given in the article.

Structure
For the majority of the article, the magazine uses a three-column format. The size of the type is almost too small, but it is not very difficult to read. The information is in a single column on two of the pages. These pages have large ads on them, making the pages more difficult to read because of the distractions created by the ads. Another problem is the spacing. The spaces are between the heading and the paragraphs, and no spaces between paragraphs. This makes the article look bunched up.

Organization of the Article
There are six topic headings throughout the article. All of the headings are level one headings with all bold, capital letters.

The majority of the paragraphs are six to seven sentences long. They can range in length from two-sentence paragraphs, up to nine-sentence paragraphs.

Visuals
There are not many visuals in the article. The only picture that is about the article is on the first page. That visual has pictures of different fuels with labels under them, and future concepts. The other pictures throughout the article are ads for different products.

They have a large quote about your car supplying energy to your house to help attract people to read the article on the fourth page.

Final Comments
I chose this particular article because it is very interesting to me. The picture on the front of the article is what attracted me to start reading it. As I started to read the article, the information and possibilities of the future are what kept me reading the article. The only way this information would be useful to me is if I went to work for a company trying to develop these new products. For the majority of people, this particular article is for enjoyment and debate only.

My opinion is the author did a good job of presenting the material. He explained terms and products in development that the average person would not understand. He was also very descriptive about the possibilities of the future. This lets your imagination run wild with the information given.

Annotated Bibliography

An annotated bibliography is important for students because it gives them a brief summary of an article's content.

Imagine doing a lengthy research project and having to have a number of references for your writing. Imagine, again, having to read everything you come into contact with before you determine whether or not you can use it. Not an exciting prospect! Now imagine that you can shorten that process. . . . you can. . . . .if you read the summaries provided by databases.

However, if you've ever completed a research project, you know that *some* summaries do not accurately reflect what is in the article. The end result is that your time is wasted because you wound up reading something that you may not be able to use—all because someone did not summarize an article correctly. ***Therefore, when you summarize your articles, accuracy is imperative!***

Summary Writing

Summary writing is a very important writing skill that is useful for *all* forms of writing. Being able to condense ideas into brief explanations, giving complete pictures with a minimum of words is a valuable skill. By being able to summarize information, writers can get to the point quickly and not waste a reader's valuable time.

In formal reports, readers will often read a summary to determine whether or not they read the report. It must be a *stand-alone* document. Therefore, the writer must give an accurate picture of what is contained in the report.

Caution: Do not attempt to write a summary until after you have read the entire document and understand what is being said.

Characteristics of an Informative Summary:

- Contains key information including findings, conclusions, recommendations, or decisions.
- Concise, direct, no more than 10% of the original document, e.g., a 5-page report would require no more than ½ page summary. This is just a rule of thumb; summaries may be even less than the 10% rule.
- Gives a complete picture of the document.

Guidelines for writing an Informative Summary:

- Summarize the main idea of the article into one sentence
- Summarize *every section* of the article in one or two sentences, focusing on the main point of the section, omitting examples and other supporting evidence
- Combine sentences, eliminate wordiness, and add transitions to make summary more readable

Assignment:
Choose 5 magazine articles that deal with the same topic—in your field of study. Read them and summarize them. Your articles should be at least 3-4 pages, excluding filler material (advertisements, etc.). ***Do not use the first five articles you come to!*** Choose your articles carefully. In addition, you should not use the same article as another student. Use the following format:

Name of author (if present). "Name of article in quotation marks." *Name of magazine in italics* (or name of website). Date of publication (posted date on website, if available). Page numbers. Date of access (for websites only).

Leave one blank line, then type the article summary. Leave ***two blank lines*** between the end of your summary and the next magazine article.

An example begins on the following page.

MEMO

To: Stuart Tichenor
From: Lance Cacy
Date: October 11, 2001
Subject: Annotated Bibliography

==========

Geothermal Heat Pump Consortium. "Geothermal: How it Works." <http://groundloop.com/geothermal.htm>. 1997. October 5, 2001.

Most of the components for a geothermal heat pump are all contained in one cabinet. A majority of heat pumps use conventional ductwork to distribute air. Many residential systems can also provide hot water more efficiently than conventional methods. A geothermal system will either have a closed or open loop. Advantages of ground source heat pumps are that they're more efficient than air source heat pumps, economical, reduced noise, and overall system quality. Geothermal systems usually pay themselves back within 5 years and have the lowest environmental cost of all the technologies. More than 95% of geothermal customers are satisfied with their systems.

Greg Mazurkiewicz. "The Ground Source Gang Gets Down in the Dirt" *ACRH News*. August 27, 2001, pp. 12-13.

The Raytown, Mo. School District could install a correctly designed geothermal system at a lower cost than traditional roof top units in this retrofit situation. Geothermal systems provide cost savings over the life of the equipment. A direct exchange coil system is even more efficient than a standard glycol/ water coil. In residential tests, direct exchange technology has a much higher coefficient of performance as compared to air-to-air heat pumps. Direct exchange systems have many advantages and a few disadvantages, including possible corrosion of the pipe and dehydration of the ground. Using geothermal systems for radiant heating is also a possibility.

South Carolina Energy Office. "Geothermal Heat Pumps." <http://www.state.sc.us/energy/>. October 5, 2001.

Geothermal heat pumps move heat from one place to another. It moves heat from a warm area and puts it in a cooler one, and vice versa. Geothermal heat pumps use 25-50 percent less electricity than conventional heating and cooling systems and can provide hot water for your home. They are also quieter than conventional systems and provide better humidity control. Geothermal systems can be installed in new and retrofit situations. Environmental impact is low because no fossil fuels are being burned. Maintenance costs are about one-third of a conventional system and provide excellent "zone" space conditioning. Geothermal systems have long-term durability. Vandalism isn't really an issue because there aren't a lot of outdoor parts. Installing a geothermal system is not a do-it-yourself project. They are rated by Coefficient of Performance and the Energy Efficiency Rating. Some utility companies offer rebates, financing, or special

electric rate programs or you can apply for an energy efficient mortgage from a financial institution. A geothermal system exchanges heat with the ground using four basic ground-piping systems. Three of them are closed-loop and one open loop.

Elliot Schrank. "Geothermal Heat Pumps." <www.human.cornell.edu/dea/extension/docs/sum94/geoheat.htm>. October 4, 2001.

The most common and inefficient is the air-source heat pump. Geothermal heat pumps use the earth as a more stable source of seasonal temperatures. Geothermal systems use less energy than air-to-air systems because of the earths more constant temperature. There are three types of geothermal systems; closed-loop, direct expansion closed-loop, and open-loop. There are many benefits to air-source heat pumps but the initial cost is two to three thousand dollars more than a conventional system.

John W. Lund. "Geothermal Heat Pump Utilization In The United States." <http://geoheat.oit.edu/pdf/tp32.pdf>. October 5, 2001.

New developments in geothermal systems circulate refrigerant instead of water/antifreeze in buried pipes, which has a net efficiency gain of 15 to 20% over the water/antifreeze systems. Vertical loop systems depend upon ground water temperature and horizontal systems are influenced by solar radiation. Cooling loads control the size of the system in the southern states and heating loads control the size in the northern states. Heating and cooling loads are provided for all 50 states. Earth coupled systems are being installed in large numbers partially because of electric companies recent promotion. The energy associated with ground and water source heat pumps can be viewed as the energy saved as compared to air-source equipment or the total energy delivered into the ground or ground water. Estimation formulas and instructions are provided.

Writing an Article

Writing in your field

If you think you're not good enough to write an article for a magazine, you're wrong! Some magazines want people to write articles for them because they're passionate about their career or profession; that means, in some cases, they're willing to help a writer out in order to get an article published. One magazine I looked at recently said "it's not unusual for an article to go through several revisions before it's in publishable form." Pretty amazing. That came from a construction magazine called *Up and Running*—the official publication of the Equipment Maintenance Council—a nonprofit organization.

Do not sell your ideas short—they're probably worth more than you may give yourself credit for! Writing an article for a magazine is much like writing anything else—certain things have to be taken care of and recognized as part of the writing process:

- **Descriptive title**—one that catches the reader's eye, or at least accurately describes what you plan on saying.
- **Introductory paragraph**—needs to provide background information so readers will know what perspective you're working from. The final sentence of your introductory paragraph should be the main idea of your article—the "thesis statement."
- **Body paragraphs**—the "meat" of your article—should always support your main idea. If it doesn't, then it's irrelevant and should be deleted.
- **Transitions**—using transitions such as "however," "in addition," and "therefore" can help tie your information together and make it flow. As a rule, use "however" at the beginning of a sentence instead of "but." Use "in addition" instead of "also."
- **Conclusion/Final paragraph**—should remind your readers what you've been telling them and bring your article to a logical close.

Just an idea. . . . .
When you think you've finished. . . . . read your introduction, then skipping the body of the article, go to the final paragraph to see if you're discussing the same thing that you began with. If you are, you're on the right track. If you're not, then some revision is needed to maintain the focus of your essay.

Assignment

- Choose a magazine—either a trade journal or popular magazine—that you'd like to have an article published in.
- Determine who the audience is
- Analyze the tone and writing conventions of the article
- Determine the content of your potential article
- Determine the kind of article you'd like to publish and write a "scratch outline" consisting of potential headings—each followed by one or two sentences that describes the content of that section
- Find information in the magazine—or on the website—concerning submissions and author's guidelines.
- Write the article! (I won't make you submit it—however, if you'd like to, that could probably be arranged).

Before you turn in your article. . . .
Write a very brief memo—and staple it on top of your article. The memo should contain the following information.

- Name of the magazine you're writing for
- Type of audience that will read the article
- Title of the article and the focus/main idea
- Word count
- Email address—and whether or not you'd *really* like to try and get this published—which may require further revision on your part.

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